

Kenney Flats Fuels Reduction and Ponderosa Pine Restoration Project Environmental Assessment

Biological Evaluation for Fish and Wildlife

Archuleta County
Colorado

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INTRODUCTION

The 2000 fire season was one of the most challenging in history. The magnitude of the fires is the result of two primary factors: a severe drought, accompanied by a series of storms that produced thousands of lightening strikes followed by windy conditions; and the long-term effects of almost a century of aggressively suppressing all wildfires that has led to an unnatural buildup of brush and small trees in our forests and rangelands.

On a national scale the USDA Forest Service (USFS) published a strategy to move towards more fire resistant, healthy ecosystems: *Protecting People and Sustaining Resources in Fire-Adapted Ecosystems: A Cohesive Strategy* (USDA Forest Service, 2000). The Pagosa Ranger District identified the Kenney Flats Analysis Area (hereafter referred to as analysis area) as having a high potential to achieve these goals.

Purpose of this Biological Evaluation

The USFS has developed policy regarding the designation of sensitive species in the Rocky Mountain Region and to ensure they receive full consideration throughout the NEPA planning process (Forest Service Manual 2600, Chapter 2670, Rocky Mountain Region [Region 2]; Supplement No. 2600-2003-1). Eight criteria were considered and evaluated to determine whether a species merited sensitive status in the Region (R2 Supplement 2600-2003-1, 2672.11). These criteria included 1) geographic distribution within the Region, 2) geographic distribution outside the Region, 3) capability of the species to disperse, 4) abundance of the species in the Region, 5) population trend in the Region, 6) habitat trend in the Region, 7) vulnerability of habitats in the Region, and 8) life history and demographic characteristics of the species. Although information may not be complete for all eight criteria, the available information was reviewed to see if it provided a compelling argument that population viability was of concern as evidenced by known or predicted downward trends.

Upon completion of applying the eight criteria to numerous species, the Region developed a list of sensitive species that became effective December 1, 2003. The San Juan National Forest (SJNF) has since reviewed the Regional Sensitive Species List and identified species that occur, are suspected of occurring, or have habitat present on the Forest.

A Biological Evaluation (BE) is the means to review agency actions and document the effects to sensitive species. This BE evaluates the effects of the proposed Kenney Flats Fuels Reduction and Ponderosa Pine Restoration Project to sensitive fish and wildlife species with habitat on the SJNF.

The information and analysis in this BE was developed based on field reconnaissance of the analysis area, reviewing published and unpublished reports and other scientific literature, and contacts with agency resource personnel. The landscape within and surrounding the analysis area was visited by Kelly Colfer, principal biologist with Western Bionomics LLC, to determine habitat suitability for sensitive species during the period from October 10 through October 15, 2002. Since this period, the area has been visited by Forest Service wildlife biologists and other agency personnel.

PROPOSED MANAGEMENT ACTION

Existing vegetative condition

The analysis area encompasses 14,007 acres of public land located roughly 12.5 miles south-southeast of Pagosa Springs, Colorado. Approximately 1,642 acres of private land are present with the majority consisting of ponderosa pine and Gambel oak, and grass-forb parks. Elevation ranges from approximately 6,868 to 9,200 feet. Most of the area has relatively gentle terrain with slopes less than 25%. Steeper ground, with slopes ranging from 25-60% is found in the major drainages of Spiler Canyon, Halfway Canyon, and the Blanco River Canyon.

Ponderosa pine forests dominate the relatively flat areas in the central and northwestern portion, while large stands of Gambel oak dominate the eastern side. Numerous meadows of various sizes are intermixed with the ponderosa pine and Gambel oak stands. Warm-dry mixed conifer dominated by ponderosa pine, and cool-moist mixed conifer dominated by Douglas fir are also present, occurring primarily on the steeper north and west facing slopes around Halfway and Spiler Canyons, and also on the slopes above the Blanco River. There are a few small patches of aspen in the east side, and a small stand dominated by Rocky Mountain juniper in the southern portion along U.S. Highway 84.

The shrub/Gambel oak cover type is a diverse plant association found on hills, flats, and canyon slopes at elevations ranging from about 6,868 to 9,200 feet. This type comprises 4,050 acres, or 29% of the analysis area (Table 2). Large, contiguous stands of Gambel oak dominate the eastern side of the analysis area.

Mountain grasslands consisting of various grass and forbs species are present across 1,386 acres, or 10% of the area. This cover type occurs in open parks, openings in the interior forests, and in Gambel oak dominated landscapes.

Ponderosa pine forests are present across 7,285 acres, or 52% of the analysis area. Gambel oak dominates most of the understory in ponderosa stands. The canopy base height within pine stands is generally far less than was thought to have occurred prior to Euro-American settlement. The current condition of ponderosa pine is the result of fire suppression, past timber harvest, fuelwood gathering, and livestock grazing.

Warm-dry mixed conifer, dominated by ponderosa pine, is present across 542 acres, or about 3.8%, of the area. Most of this cover type occurs on the north-facing slopes above Spiler Canyon and on the north and west slopes above the Blanco River. Cool-moist mixed conifer, dominated by Douglas fir, is present across 282 acres, or 2% of the analysis area, on the north facing slopes above Halfway Canyon.

Aspen is present across 229 acres, or 1.6%, of the analysis area. Several small stands are located in the eastern portion near the Buckles Lake Road. Smaller patches of aspen are also found as inclusions in mixed conifer and ponderosa pine forests throughout the area.

Isolated pockets dominated by riparian vegetation are found in Spiler Canyon and Halfway Canyon, and adjacent to numerous stock ponds. Cottonwoods are the dominant tree species within the Spiler and Halfway Canyons. Willows and Hawthorns are common in these canyons as well. Overall, streams within the analysis area are severely downcut and/or gullied, supporting a very narrow riparian fringe, which limits their potential as habitat for riparian

dependent species. Several intermittent and ephemeral streams are located in the analysis area, including Coyote Creek, Spence Creek, Boone Creek, and Benson Creek. None of these are fish bearing streams.

Table 2. Analysis area cover types and structural stages.

Cover Type	Habitat Structural Stage								Grand Total
	1	2	3A	3B	3C	4A	4B	4C	
Grass/forb	1,386								1,386
Barren ground/Rock									14
Shrub/Gambel oak		4,050							4,050
Riparian									119
Sagebrush		9							9
Aspen			4		97		128		229
Cool-moist mixed conifer				88			194		282
Warm-dry mixed conifer				1		45	474	22	542
Pinyon-juniper							91		91
Ponderosa pine				58		3,404	2,870	953	7,285
Grand Total	1,386	4,059	4	147	97	3,449	3,757	975	14,007

Proposed Action

The purpose of the Kenney Flats Fuels Reduction and Ponderosa Pine Restoration Project is to effect an immediate change in fire behavior, to reduce rate of spread and intensity, to maintain condition classes that support desirable fire behavior and increase forest and ecosystem diversity and resilience to disturbance. The project will further the implementation of the National Fire Plan (USDA Forest Service, 2000), the Archuleta County Community Action Plan (on file at the Pagosa Ranger District Office), and the San Juan National Forest Land and Resource Management Plan (USDA Forest Service, 1992).

The proposed action involves direct manipulation of vegetation in the form of thinning trees over 24% of the analysis area (3,347 acres), prescribed fire over 54% (7,525 acres) under all three action alternatives, mowing of shrub/Gambel oak over 1% (201 acres) adjacent to private land, 3.5 miles of temporary road construction and 2.4 miles of road reconstruction. The majority of thinning treatments would occur primarily in ponderosa pine (24% or 3,309 acres) and warm-dry mixed conifer (38 acres). Prescribed fire would be implemented in ponderosa pine, warm-dry mixed conifer, aspen, Gambel oak and grass/forb cover types.

Fuels reduction activities and the ecological restoration prescriptions for the following three action alternatives are the same. Elements that change by alternative are disposal of woody material, and the timing of treatments.

For all three action alternatives, following thinning and prescribed burning, treated units will be highly variable, based on the current characteristics of the stand. However, treated stands will generally appear more open and park-like having an understory of grasses and herbaceous vegetation. No pre-settlement trees will be removed so older and larger diameter ponderosa pine will appear more visually prominent following treatment. Pre-settlement trees are those that established prior to 1880 and can be recognized by the relatively smooth, orange bark with large plates. The crowns of pre-settlement trees are often irregular and flat topped. Landings and roads will be located to avoid pre-settlement trees.

Interspersed amongst these open stands will be existing clumps of denser ponderosa pine having a range of size and age classes. These pine clumps will generally range in size from

1/20 to 3/4 acre having 2 to 40 trees. The spatial arrangement and amount of area in clumps will be variable and dependent on the existing clumpiness of individual stands.

Openings will be created and will be dispersed across approximately 7% (270 acres total) of the treated acreage. Groups will range in size from 1/4 to 2 acres.

Existing clumps of large Gambel oak (6 inches + diameter at root collar) will be maintained over the landscape and where feasible, protected during prescribed burning and thinning.

Alternative 1 – No Action

No restoration activities, other than previously planned prescribed burning, would occur under this scenario. Current activities in the landscape area would continue. These include implementation of the Pagosa Ranger District prescribed burning plan, grazing activities, dispersed recreation, camping, hunting, and firewood gathering.

The goals set forth in the National Fire Plan, Archuleta County Community Fire Action Plan, and the San Juan National Forest Land and Resource Management Plan would not be met in this alternative.

Alternative 2 – Incremental Fuels Reduction – Fuels Treated on Site

Alternative 2 would involve the mechanical treatment of 3,826 acres, 438 mowed and 3,388 thinned. Each thinning unit would be entered four times, once every five years over a 20-year period until desired stand densities, Condition Class and desired stand structures are reached. Prescribed burning would follow each thinning. The majority of thinned material would be left on site. Only incidental amounts of firewood and posts/poles would be removed via personal use permits. Since thinned material would be treated on-site, this alternative would not involve any road reconditioning, reconstruction, or temporary road construction activities.

Depending on site densities, thinning would remove from 18 to 511 trees per acre and leave a range of 14 to 46 trees per acre. This generally equates to removing 28 to 142 square feet of basal area per acre leaving residual stands ranging from 56 to 94 basal area.

Rationale: This alternative addresses the suggestion to evaluate an approach that does not include the use of commercial operations to remove the small material produced from thinning. This also reflects the concerns that no additional roads be built and that no heavy equipment be used for fuel removal. Because of the heavy fuel loading, the units need repeated entries to thin and burn safely.

Alternative 3 – Periodic Fuels Reduction – Fuels Taken off Site

Alternative 3 would mow and thin the same acres as Alternative 2. However, under this alternative the units to be thinned would be divided into four smaller areas. Every five years one of the smaller units would be thinned, and then a prescribed burn will be conducted as a follow-up. Areas closer to private land would have a higher priority for treatment. The entire treatment area would be accomplished by year 20. Treated material making up various forest products (post and poles, firewood and sawtimber) would be removed and sold via a number of personal use permits, stewardship contracts, and commercial sales of varying sizes.

Unlike Alternative 2, this alternative would allow for the removal of usable thinned material such as post and poles and small diameter saw timber through available contracting or permitting procedures via current accepted means such as timber permits, timber sale contracts, stewardship or service contracts. In particular, usable woody fuels, such as post and poles and small diameter saw timber would be removed from the site. Areas to be thinned would be entered at one time, as the removal of material would allow for prescribed burning to be conducted safely.

This alternative would involve various road reconditioning, reconstruction and temporary road construction activities in order to provide removal of wood products while meeting Forest Plan Standards and Guidelines for water and soil resource protection. No new permanent roads would be constructed. The majority of roadwork would be accomplished during the first five-year treatment period.

Thinned material will remain on site until prescribed burned for units 15, 16, and 17 totaling 208 acres. No road reconditioning, reconstruction or temporary road construction activities will take place within these units.

Depending on site densities, thinning would remove from 15 to 499 trees per acre and leave a range of 16 to 63 trees per acre. This generally equates to removing 22 to 129 basal area leaving residual stands ranging from 56 to 94 basal area.

Rationale: Provides for restoration and fuels reduction treatments in a systematic approach across the landscape in 20 years. Requires only one entry per acre to accomplish. Sensitive to limits of equipment available, yearly treated acres, operationally feasible, and recovery of some activity costs.

Alternative 4 – Prompt Fuels Reduction – Fuels Taken off Site

Alternative 4 is designed to achieve the project objectives in the most expeditious timeframe and thins and mows the same acres as the other action alternatives. As in Alternative 3, this allows for the removal of usable thinned material. This alternative would mechanically treat all acreage at the end of 5 years, with follow-up prescribed burning as soon as feasible.

Alternative 4 would result in a high level of activity in years 1 through 5, where thinning activities would occur, in conjunction with prescribed fire. Prescribed fire would be used following removal of usable woody fuel to maintain a restored stand condition. Usable treated material making up various forest products (post and poles, firewood and small diameter saw timber) would be removed and sold via a number of personal use permits, stewardship contracts, and commercial sales of varying sizes.

This alternative would involve various road reconditioning, reconstruction and temporary road construction activities in order to provide safe removal of wood products while meeting Forest Plan standard and guidelines for water and soil resource protection. No new permanent roads would be constructed.

Depending on site densities, treatment would remove from 11 to 499 trees per acre and leaving a range of 16 to 63 trees per acre. This generally equates to removing 7 to 128 basal area leaving residual stands ranging from 58 to 95 basal area.

Rationale: This alternative represents the most expeditious means to accomplish fuels reduction and restoration objectives. Periods of mechanical disturbance are limited. Provides the quickest change in Condition Classes over the largest area and recovers some activity costs.

SPECIES CONSIDERED, AND DISMISSED FROM FURTHER EVALUATION

This BE addresses sensitive species from the Regional Foresters sensitive species list, effective December 1, 2003 (Forest Service Manual 2600, Chapter 2670, Rocky Mountain Region [Region 2]; Supplement No. 2600-2003-1). From the Regional Forester's sensitive species list, 31 fish and wildlife species are known to occur, suspected to occur, or have habitat present on the SJNF (Table 1). This includes two amphibians, 18 birds, 4 fish, one insect, and six mammals. Table 1 describes brief habitat descriptions, habitat presence in the analysis area and period of use, probability of occurrence in the analysis area, and whether the species is evaluated in this BE. Habitat descriptions were taken from Hammerson (1999), Andrews and Righter (1992), Fitzgerald et al. (1994), and Page and Burr (1991).

The primary vegetation types that provide habitat for wildlife in the analysis area include ponderosa pine, shrub/Gambel oak, grass-forb parks/openings, warm-dry mixed conifer, and aspen. Other vegetation types present, but less abundant include cool-moist mixed conifer, riparian, and sagebrush. There are no marshes, wetlands, lakes or reservoirs present in the analysis area with the exception of Spence Reservoir on private land. Additionally, there are no streams or waterfalls in the analysis area.

As mentioned in Table 1, many species utilize habitats that are not present, or no known populations exist in the analysis area. The proposed action will therefore have **no impact** on the following species: boreal toad, American bittern, black swift, boreal owl, burrowing owl, Columbian sharp-tailed grouse, northern harrier, short-eared owl, white-tailed ptarmigan, bluehead sucker, Colorado River cutthroat trout, flannelmouth sucker, roundtail chub, Great Basin silverspot, Gunnison's prairie dog, river otter, and wolverine. These species are dismissed from further analysis.

Activities associated with the proposed action will avoid the limited amount of habitat present in the analysis area (no treatment proposed in habitat, or areas will be avoided through project design criteria or implementation of Forest Plan Standards and Guidelines) for the Brewer's sparrow, ferruginous hawk, loggerhead shrike, purple martin, and American marten. Consequently, the proposed action will have **no impact** on these species, and are therefore dismissed from further analysis (Table 1).

Based on the vegetation types present in the analysis area, riparian areas, and man made structures such as stock ponds, habitat is present for the following nine species: northern leopard frog, American peregrine falcon, American three-toed woodpecker, flammulated owl, Lewis' woodpecker, northern goshawk, olive-sided flycatcher, spotted bat, and Townsend's big-eared bat. These nine species are addressed in more detail in the following sections.

Table 1. Forest Service Region 2 sensitive species known to occur, suspected to occur, or with habitat present on the SJNF (USDA Forest Service, 2004a).

Species	Habitat	Habitat Present In the Analysis Area, and Use Period	Probability of Occurrence in the Analysis Area (based on habitat suitability, or known or historic observations/occurrences)	Species Evaluated
Amphibians (2)				
Boreal toad (<i>Bufo boreas boreas</i>)	Damp conditions in the vicinity of marshes, wet meadows, streams, beaver ponds, glacial kettle ponds, and lakes interspersed in subalpine forest (lodgepole pine, Engelmann spruce, subalpine fir, and aspen). Sometimes found where ponderosa pine is present. Elevational range is mainly 8,500 ft. to 11,500 ft. with higher and lower occurrences in some areas.	No, there are no marshes, beaver ponds, wet meadows, etc. present in the analysis area.	None	No, there is no habitat present in the analysis area for boreal toads. The proposed action will have no impact on the boreal toad. No further discussion required.
Northern leopard frog (<i>Rana pipiens</i>)	Wet meadows and the banks and shallows of marshes, ponds, glacial kettle ponds, beaver ponds, lakes, reservoirs, streams, and irrigation ditches. Generally found at the waters edge. Elevation range extends up to 11,000 ft in southern Colorado.	Yes, some potential breeding habitat in stock ponds and the adjacent Spence Reservoir located on private land. The species is active during spring and summer.	High, northern leopard frogs have been found in the analysis area.	No, see effects of the proposed action on species evaluated.
Birds (18)				
American bittern (<i>Botaurus lentiginosus</i>)	Cattail marshes and sometimes in adjacent wet meadows. Rarely seen outside of marshes around lakes and in riparian areas, primarily in spring and fall migration.	No, there are no marshes, or wet meadows present in the analysis area.	None	No, there is no habitat present in the analysis area for American bitterns. The proposed action will have no impact on the American bittern. No further discussion required.
American peregrine falcon (<i>Falco peregrinus anatum</i>)	Breeding pairs nest on cliffs and forage over adjacent coniferous and riparian forests, and at times other habitats. Migrants and winter residents occur mostly around	Yes, foraging habitat across the analysis area primarily in grass-forb parks and riparian areas. Spring – Fall	High, based on habitat present for foraging in the analysis area, and a known eyrie approximately 7 air miles east of the analysis area.	Yes

Species	Habitat	Habitat Present In the Analysis Area, and Use Period	Probability of Occurrence in the Analysis Area (based on habitat suitability, or known or historic observations/occurrences)	Species Evaluated
	reservoirs, rivers, and marshes, grasslands, and agricultural areas.			
American three-toed woodpecker (<i>Picoides dorsalis</i>)	Primarily spruce-fir forests, but where insect populations are high it may also occur in ponderosa pine, Douglas-fir, and lodgepole pine forests.	Yes, cool-moist mixed conifer, warm-dry mixed conifer, and ponderosa pine habitat. There is currently no infestation of insects (bark beetles). Year-round	Low to moderate, because there is currently no infestation of insects (bark beetles) in the analysis area. Three-toed woodpeckers generally prefer higher elevation spruce-fir and mixed conifer habitats where they feed on bark beetles and larvae.	Yes
Black swift (<i>Cypseloides niger</i>)	Nest on precipitous cliffs near or behind high waterfalls. Foraging birds range at high elevations widely over most montane and adjacent lowland habitats.	No, there are no waterfalls present in or near the analysis area.	None	No, there is no habitat present in the analysis area for black swifts. The proposed action will have no impact on the black swift. No further discussion required.
Boreal owl (<i>Aegolius funereus</i>)	Mature spruce-fir or spruce-fir/lodgepole pine with meadows.	No, there is no spruce-fir present in the analysis area.	None	No, there is no habitat present in the analysis area for boreal owls. The proposed action will have no impact on the boreal owl. No further discussion required.
Brewer's sparrow (<i>Spizella breweri</i>)	Breeds primarily in sagebrush shrublands, but also other shrublands such as mountain mahogany or rabbitbrush.	Yes, a limited amount of sagebrush habitat (9 acres). Spring – Summer	Low, based on the limited amount of sagebrush habitat present in the analysis area.	No, the proposed action will not affect the limited amount of sagebrush habitat for Brewer's sparrow. The proposed action will have no impact on the Brewer's sparrow.
Burrowing owl (<i>Athene cunicularia</i>)	Grasslands; usually in or near prairie dog towns.	No, there are no short grass grasslands or prairie dog towns present in the analysis area.	None	No, there is no habitat present in the analysis area for burrowing owls. The proposed action will have no impact on the burrowing owl. No further discussion required.
Columbian sharp-tailed grouse (<i>Tympanuchus phasianellus columbianus</i>)	Gambel oak and serviceberry shrublands, often interspersed with sagebrush shrublands, aspen forests, wheatfields, and irrigated meadows and alfalfa fields. To be restored by Colorado Division of Wildlife (CDOW) starting in 2004. Currently not on Columbine or Pagosa Ranger Districts. Dolores	No, the species does not occur on the Pagosa Ranger District.	None	No, there is no habitat present in the analysis area for Columbian sharp-tailed grouse. The proposed action will have no impact on the Columbian sharp-tailed grouse. No further discussion required.

Species	Habitat	Habitat Present In the Analysis Area, and Use Period	Probability of Occurrence in the Analysis Area (based on habitat suitability, or known or historic observations/occurrences)	Species Evaluated
	may retain some habitat.			
Ferruginous hawk (<i>Buteo regalis</i>)	Grasslands and semidesert shrublands, and rare in pinyon-juniper woodlands.	Yes, a limited amount of pinyon-juniper habitat (91 acres). There are no short grass grasslands or semidesert shrublands present in the analysis area. Possible fall migrant through the area.	Low, based on the limited amount of pinyon-juniper habitat present in the analysis area. The species is rare in pinyon-juniper woodlands.	No, the proposed action will not affect the limited amount of pinyon-juniper habitat for ferruginous hawks. The proposed action will have no impact on the ferruginous hawk. No further discussion required.
Flammulated owl (<i>Otus flammeolus</i>)	Old growth or mature ponderosa pine and ponderosa-Douglas-fir forests, often mixed with mature aspen; pure aspen; and old growth pinyon-juniper woodlands.	Yes, mature ponderosa pine and warm-dry mixed conifer habitat. Spring - Summer	High, flammulated owls have been found in the analysis area.	Yes
Lewis' woodpecker (<i>Melanerpes lewis</i>)	Lowland and foothill riparian forests, agricultural areas, edges of ponderosa pine stands and urban areas with tall deciduous trees; rarely in pinyon-juniper woodlands.	Yes, habitat is present across the entire analysis area. Spring - Fall	High, Lewis' woodpeckers have been observed in the analysis area.	Yes
Loggerhead shrike (<i>Lanius ludovicianus</i>)	Sagebrush and occasionally oakbrush with big well developed openings of grasslands, agricultural areas, semi-desert shrublands, and sometimes open pinyon-juniper woodlands; breeding birds are usually near isolated trees or large shrubs.	Yes, a limited amount of sagebrush (9 acres) and pinyon-juniper (91 acres) habitat. Grasslands and oakbrush present in the analysis area are primarily associated with or adjacent to ponderosa pine and warm-dry mixed conifer as opposed to lower elevation sagebrush, semidesert shrublands, short grass grasslands, or agricultural areas. Spring - Fall	Low to moderate, based on the limited amount of sagebrush and pinyon-juniper habitat present in the analysis area.	No, the proposed action will not affect the limited amount of sagebrush or pinyon-juniper habitat for loggerhead shrikes. The proposed action will have no impact on the loggerhead shrike.
Northern goshawk (<i>Accipiter gentilis</i>)	Mature deciduous, coniferous and mixed forests year-round.	Yes, aspen, cool-moist mixed conifer, warm-dry mixed conifer, and ponderosa pine habitat. Spring - Fall	High, one known goshawk territory is present in the analysis area.	Yes
Northern harrier (<i>Circus</i>)	Grasslands, shrublands,	No, there are no short grass grasslands,	None	No, there is no habitat present in the analysis area for northern

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<i>cyaneus</i>)	wetlands, agricultural, and alpine tundra in fall.	marshes, shrub steppe, alpine, or agricultural lands present in the analysis area.		harriers. The proposed action will have no impact on the northern harrier.
Olive-sided flycatcher (<i>Contopus cooperi</i>)	Breeds primarily in mature spruce-fir and Douglas-fir forests, especially on steep slopes or near cliffs, and less often in other types of coniferous forests, montane and foothill riparian, and aspen forests; burned areas.	Yes, open stands of aspen, ponderosa pine, and warm-dry mixed conifer. Spring – Summer	High, the species has been observed in the analysis area.	Yes
Purple martin (<i>Progne subis</i>)	Old growth and mature aspen forests near parks and generally near water; mixed aspen/ponderosa pine or aspen/Douglas-fir forests.	Yes, marginal aspen habitat. Possible summer use	Low, aspen habitat present in the analysis area is marginal due to the juxtaposition to parks and water sources.	No, the proposed action will not affect the limited amount of marginal aspen habitat for purple martins. The proposed action will have no impact on the purple martin. No further discussion required.
Short-eared owl (<i>Asio flammeus</i>)	Open habitats including grasslands, marsh edges, shrub-steppes and agricultural lands.	No, there are no short grass grasslands, marshes, shrub steppe, or agricultural lands present in the analysis area.	None	No, there is no habitat present in the analysis area for short-eared owls. The proposed action will have no impact on the short-eared owl. No further discussion required.
White-tailed ptarmigan (<i>Lagopus leucurus</i>)	Alpine tundra. Areas that are mostly snowfree early in the season are used for breeding and females with broods generally occur on rocky, wet tundra. Males generally winter above timberline in areas of short willow thickets, while females often winter at or below timberline in taller, denser willow thickets and along willow-dominated watercourses.	No, there is no alpine habitat present in the analysis area.	None	No, there is no habitat present in the analysis area for white-tailed ptarmigans. The proposed action will have no impact on the white-tailed ptarmigan. No further discussion required.
Fish (4)				
Bluehead sucker (<i>Catostomus discobolus</i>)	Rocky riffles and runs of small to large rivers in the Upper Colorado and San Juan River drainages.	No, there are no streams containing fish in the analysis area.	None	No, there is no habitat present in the analysis area for bluehead suckers. The proposed action will have no impact on the bluehead sucker.

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				No further discussion required.
Colorado River cutthroat trout (<i>Onchorynchus clarki pleuriticus</i>)	Upper reaches of specific streams in the Colorado River drainage including the San Juan National Forest.	No, there are no streams containing fish in the analysis area.	None	No, there is no habitat present in the analysis area for Colorado River cutthroat trout. The proposed action will have no impact on the Colorado River cutthroat trout. No further discussion required.
Flannelmouth sucker (<i>Catostomus latipinnis</i>)	Rocky pools, runs, and riffles of medium to large rivers; less often in creeks and small rivers, in the Upper Colorado and San Juan River drainages.	No, there are no streams containing fish in the analysis area.	None	No, there is no habitat present in the analysis area for flannelmouth suckers. The proposed action will have no impact on the flannelmouth sucker. No further discussion required.
Roundtail chub (<i>Gila robusta</i>)	Rocky runs, sometimes pools, of creeks and small to large rivers; sometimes common in impoundments in the Upper Colorado and San Juan River drainages.	No, there are no streams containing fish in the analysis area.	None	No, there is no habitat present in the analysis area for roundtail chubs. The proposed action will have no impact on the roundtail chub. No further discussion required.
Insects (1)				
Great Basin silverspot (<i>Speyeria nokomis nokomis</i>)	Moist meadows, seeps, marshes, and streambanks primarily below 7,500 ft.	No, there are no moist meadows, seeps, marshes, or streambanks in the analysis area.	None	No, there is no habitat present in the analysis area for Great Basin silverspots. The proposed action will have no impact on the Great Basin silverspot. No further discussion required.
Mammals (7):				
American marten (<i>Martes americana</i>)	Spruce-fir and mesic coniferous forests with complex physical structure on the ground.	Yes, cool-moist mixed conifer habitat (282 acres) Limited year-round	Low to moderate based on the limited amount of suitable habitat present.	No, the proposed action will not affect cool-moist mixed conifer habitat for American marten. The proposed action will have no impact on the American marten.
Gunnison's prairie dog (<i>Cynomys gunnisoni</i>)	Grasslands, semidesert and montane shrublands	No, there are no prairie dog colonies in the analysis area.	None	No, there is no habitat present in the analysis area for Gunnison's prairie dogs. The proposed action will have no impact on the Gunnison's prairie dog. No further discussion required.
River otter (<i>Lontra canadensis</i>)	Specific drainages with fish across the SJNF including the San Juan River, Animas River, Piedra River, Los Pinos River, Florida River, and Dolores River.	No, there are no streams containing fish in the analysis area.	None	No, there is no habitat present in the analysis area for river otters. The proposed action will have no impact on the river otter. No further discussion required.

Species	Habitat	Habitat Present In the Analysis Area, and Use Period	Probability of Occurrence in the Analysis Area (based on habitat suitability, or known or historic observations/occurrences)	Species Evaluated
Spotted bat (<i>Euderma maculatum</i>)	Ponderosa pine, pinyon-juniper woodlands, and open semidesert shrublands; Rocky cliffs are necessary to provide suitable cracks and crevices for roosting, as is access to water.	Yes, potential foraging habitat across the analysis area. Spring – Summer	Moderate - High	Yes
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	Semidesert shrublands, pinyon-juniper woodlands, and open montane forests up to 9,500 ft. elevation; associated with caves and abandoned mines for day roosts and hibernacula but also uses abandoned buildings and crevices on rock cliffs for refuge.	Yes, potential foraging habitat across the analysis area. Spring – Summer	None	Yes
Wolverine (<i>Gulo gulo</i>)	Alpine, spruce-fir; remote areas with limited disturbance.	No, there is no alpine or spruce-fir habitat in the analysis area.	None	No, there is no habitat present in the analysis area for wolverines. The proposed action will have no impact on the wolverine. No further discussion required.

EVALUATED SPECIES INFORMATION

Information regarding basic life history, status, trend, distribution, limiting and controlling factors, and influential activities and risks for northern leopard frog, American peregrine falcon, flammulated owl, American three-toed woodpecker, Lewis' woodpecker, northern goshawk, olive-sided flycatcher, spotted bat and Townsend's big-eared bat was reviewed for this project. This information is compiled in Species Assessments (see literature citation section) prepared for the SJNF and are on file at the Pagosa Ranger District.

Existing habitat for sensitive species evaluated

Northern leopard frog

Within the analysis area, habitat for northern leopard frogs is limited to developed stock ponds and riparian areas. There are no wetlands, and approximately 119 acres of riparian are present. Although not preferred habitat, leopard frogs have been observed using stock ponds within close proximity to riparian areas. The habitat quality within stock ponds is considered less optimal than wetlands which typically contain a more stable water and food source. Stock ponds were built to help manage and enhance livestock distribution rather than as specific habitat for amphibians.

Surveys for northern leopard frogs have been conducted in the analysis area as well as other locations across the Pagosa Ranger District and SJNF. Leopard frogs have been found in stock ponds within the analysis area and in numerous suitable wetland habitats across the District. Leopard frogs have been reported from at least 16 sites across the District (USDA Forest Service, 2004b).

American peregrine falcon

There is no nesting habitat (cliffs or rock outcrops) in the analysis area for the peregrine falcon. There is an eyrie approximately seven miles east of the area. Peregrine's hunt over a variety of vegetation types and use large hunting territories extending to a radius of up to 18 miles. The analysis area is within foraging habitat of the adjacent eyrie. Grass-forb parks, riparian, and Spence Reservoir located on private land likely provide the most suitable habitat for foraging, encompassing over 1,500 acres, as they provide habitat for a diversity of avian prey.

There appears to be a strong increasing population trend for peregrine falcons in Colorado (USDA Forest Service, 2003). There are at least seven eyries on the Pagosa Ranger District, and numerous eyries located across the SJNF.

American three-toed woodpecker

Within the analysis area, habitat for three-toed woodpeckers consists primarily of mature stands of cool-moist mixed conifer. Approximately 1.4% (194 acres) of the analysis area contains mature cool-moist mixed conifer habitat. The species is less likely to breed and forage in mature ponderosa pine and warm-dry mixed conifer habitat until post-wildfire events. Mature ponderosa pine and warm-dry mixed conifer encompass 52% (7,227 acres of ponderosa pine and 541 acres of warm-dry mixed conifer) of the area.

Three-toed woodpeckers have been observed in ponderosa pine burned areas across the SJNF where stand replacement wildfire's occurred. The species is considered to be well distributed at low densities across the higher elevations in mature spruce-fir forests across the SJNF (USDA Forest Service, 2004c). There have been no reports of three-toed woodpeckers in the analysis area.

Flammulated owl

Within the analysis area, habitat for flammulated owls consists of mature and older stands of ponderosa pine and warm-dry mixed conifer. Approximately 55% (7,746 acres) of the analysis area provides habitat for flammulated owls, with 52% consisting of mature ponderosa pine. Past activities such as historic timber harvest, fire suppression, and livestock grazing have affected habitat for flammulated owls by removing pre-settlement ponderosa pine trees, snags, and increased stem densities affecting the natural role of wildfire across the landscape.

Mexican spotted owl surveys conducted on the Pagosa Ranger District and across the SJNF from 1990 to 1994, along with more recent surveys, report flammulated owls being well distributed across the SJNF in suitable habitats (USDA Forest Service, 2004d). Owls were detected primarily in mature ponderosa pine and warm-dry mixed conifer forests, with other reports in cool-moist mixed conifer and spruce-fir forests (USDA Forest Service, 2004d).

Flammulated owls were detected at three locations in 1991 and 1992 within the analysis area, and in other locations adjacent to the analysis area.

Lewis' woodpecker

Within the analysis area, habitat for Lewis' woodpecker consists of riparian, Gambel oak shrublands, and ponderosa pine. Approximately 75% (10,443 acres) of the analysis area provides habitat for the species. Most of the habitat (45%) consists of mature ponderosa pine. Since the species shows a preference for edge habitat, or park-like areas rather than interior forests, the amount of habitat present is over estimated since 39% of the ponderosa pine stands contain canopy closures over 40%.

Lewis' woodpeckers are considered relatively common and locally abundant in suitable habitats on the SJNF (USDA Forest Service, 2004e). The species has been observed in the analysis area.

Northern goshawk

Within the analysis area, habitat for northern goshawk consists of mature stands of cool-moist mixed conifer, aspen, ponderosa pine, and warm-dry mixed conifer. Approximately 33% (4,686 acres) of the analysis area provides habitat for the species, with 27% (3,823 acres) consisting of mature ponderosa pine with canopy closures greater than 40%.

Goshawk surveys have been conducted in the analysis area and other locations across the Pagosa Ranger District and SJNF. Twenty one recently active sites (active within the last six years) have been identified across the SJNF (USDA Forest Service, 2004f). For the breeding season of 2004, 22 goshawk territories will be monitored across the SJNF. Nine of these territories are on the District. The analysis area contains one nesting territory with five nest sites. Monitoring of the active territory has been ongoing since goshawks were discovered in the area in 2002. The territory was occupied in 2002 with 2 young fledging, suspected to be occupied in 2003 but no birds were seen, and occupied in 2004 but failed for unknown reasons.

Olive-sided flycatcher

Within the analysis area, habitat for olive-sided flycatcher consists of relatively open stands of aspen, ponderosa pine, and warm-dry mixed conifer. Approximately 25% (3,453 acres) of the analysis area provides habitat for the species, with the majority 24% (3,404 acres) consisting of mature ponderosa pine stands with canopy closures less than 40%.

Olive-sided flycatchers are considered to be well distributed and abundant across the SJNF (USDA Forest Service, 2004g). The species has been observed in the analysis area.

Spotted bat and Townsend's big-eared bat

There are no mines (abandoned or active), caves, cliffs, or crevices that would provide roosting habitat for the spotted bat or Townsend's big-eared bat. Rock outcrops, cliffs, and buildings are present adjacent to the analysis area and may provide roosting habitat, therefore, the analysis area may provide potential foraging habitat for both species. Studies have reported spotted bats preferring to forage over marsh areas, open ponderosa pine, and other open areas such as meadows (USDA Forest Service, 2004h). Studies indicate that Townsend's big eared bats also

prefer to forage along forest edges, and edges at the break between riparian and forested habitats (Pierson et al. 1999). Approximately 64% of the area may provide foraging habitat for both bat species. This habitat estimate is likely over estimated because not all areas are adjacent to potential roosting habitat. Most of the potential roosting habitat occurs well beyond the analysis area, and therefore the extent of foraging in the area is unknown.

EFFECTS OF THE PROPOSED ACTION ON SPECIES EVALUATED

This section identifies direct, indirect, and cumulative effects to sensitive species resulting from the proposed action. The analysis focuses on how management actions may impact sensitive species and their habitats within a 20-year period, and beyond.

Potential project effects varies by species and is dependent on the amount of habitat affected by the proposed action and habitat that is available within the analysis area and present immediately adjacent to the analysis area. In general, under all alternatives, 25% of the analysis area would be treated by restoration thinning and mowing, and 54% would be treated with prescribed fire. The majority of thinning treatments (24% of the area) would occur primarily in ponderosa pine, while prescribed fire would be implemented in ponderosa pine (42%), warm-dry mixed conifer (2%), shrub/Gambel oak (8%), and grass/forb (2%) cover types.

In the long-term, habitat changes and related impacts to sensitive species, both positive and negative, will be essentially the same for all three action alternatives since they treat the same areas. Individual species responses to the alternatives are expected to differ based on the amount of activity occurring at a given time and period in which their habitat is treated.

Alternative 4 has the greatest potential to more quickly enhance habitat for sensitive species in the short (within 20 years) and long-term (20+ years), because the area will be treated in the shortest period (within 5 years) allowing stand structure and diversity to gradually improve. Alternatives 2 and 3 will take longer to enhance sensitive species habitat, since it will take up to 20 years for treatments to be completed.

For alternatives 3 and 4, an indirect effect to sensitive species is associated with the 3.5 miles of temporary road construction, 2.4 miles of road reconstruction, and increased human presence and activities within the area. Alternative 2 will not involve any road reconditioning, reconstruction or temporary road construction. The resulting potential impacts from project activities include short-term displacement when activities occur within the immediate area occupied by the species, and potential disruption of nesting/rearing activities. Human disturbance impacts (human presence, noise, machinery activity, etc.) to sensitive species under alternatives 2 and 3 will be low to moderate intensity over a longer duration, as opposed to alternative 4 which will be high intensity and short duration.

Upon completion of project activities, temporary roads will be closed allowing only non-motorized use (walking, hiking, horseback riding, etc.). Potential illegal ATV use may occur, however.

Northern leopard frog

Direct and indirect effects

Under no action, habitat for northern leopard frogs will remain the same.

Through the implementation of Forest Plan standards and guidelines and mitigation measures for riparian areas and stock ponds, the proposed action is not expected to directly impact habitat for northern leopard frogs. The proposed action is unlikely to appreciably impact individual leopard frogs via direct mortality caused by machinery since the species generally remains close to water sources. Stock ponds and riparian areas will be avoided via implementation of required mitigation measures. However, the species may disperse from water sources during rainy periods and could become more vulnerable to mortality (as they disperse to other suitable locations) caused by vehicles and other machinery operating in the area.

American peregrine falcon

Direct and indirect effects

Under no action, habitat for northern American peregrine falcons will remain the same.

Given the proximity of the analysis area to a known peregrine falcon eyrie, peregrines may spend time foraging in the area. Foraging activity is most likely to occur in grass-forb parks, along riparian areas, and around Spence Reservoir located on private land. Proposed treatments will burn 2% of the grass/forb foraging habitat in the analysis area, and would enhance habitat for avian prey.

The proposed action will affect stand structure within ponderosa pine, warm-dry mixed conifer, and shrub/Gambel oak stands which may result in some short-term impacts and long-term benefits to avian species by treating 25% of the area via mechanical treatment, 54% via burning. Because treatments are designed to restore the health of ponderosa pine stands and promote resilience to natural disturbances such as wildfire, there will be short and long-term benefits to avian species, and perhaps a slight benefit to peregrine falcons. Consequently, given the scale at which activities will occur in relation to foraging habitat within an 18 mile radius of the known peregrine falcon eyrie, we don't anticipate any project impacts to the peregrine falcon.

American three-toed woodpecker

Direct and indirect effects

Under no action, vegetation within the analysis area will continue along its current successional pathway. The health of ponderosa pine stands will continue to decline in the future as forested stands continue to have increased stand densities making them more vulnerable to stand replacement fire, insect infestation, and/or disease. Tree growth within the stands will be slow due to competition, and overall stand structure will continue to be atypical of stands present during pre-settlement periods. In the short-term, stand conditions will likely have no influence on three-toed woodpeckers unless a wildfire were to occur. In the long-term, the likelihood of insect infestation or wildfire will increase. If an insect infestation were to occur as a result of wildfire, three-toed woodpecker numbers would increase as they forage on bark beetles. A wildfire event would result in a temporary benefit (3-7 years) for the three-toed woodpeckers.

The proposed action will not affect three-toed woodpecker habitat in stands of mature cool-moist mixed conifer. The project's desired future condition will provide less quality foraging habitat for three-toed woodpeckers across approximately 42% of their available habitat since mechanical treatment would reduce the likelihood or intensity of stand replacement wildfire in

ponderosa pine and warm-dry mixed conifer. Prescribed burning over the entire portion of their available habitat would also reduce the likelihood of stand replacement wildfire, but may attract some individual woodpeckers to the area to forage on trees killed by fire. These effects are likely to be insignificant since the species is more strongly associated with spruce-fir habitat for breeding and foraging, but is highly associated with post-fire areas at lower elevations during bark beetle outbreaks. Under a natural disturbance regime involving frequent wildfire occurrences, stand replacement wildfire and bark beetle outbreaks were generally not common occurrences in the ponderosa pine type. Natural disturbance processes and their effects to ponderosa pine forest structure would suggest that these stands likely provided limited or marginal habitat for the species.

Flammulated owl

Direct and indirect effects

Under no action, vegetation within the analysis area will continue along its current successional pathway. Flammulated owl habitat will continue to decline in the future as ponderosa pine and warm-dry mixed conifer stand densities continue to increase making them more vulnerable to stand replacement fire, insect infestation, and/or disease. Tree growth within the stands will be slow due to competition, and overall stand structure will continue to be atypical of stands present during pre-settlement periods. Barring any natural or human induced disturbances to the area, habitat for flammulated owls will likely decrease given the continued dense nature of the forested stands, and effects to other structural attributes used by the species (large trees with sprawling horizontal branch growth used for roosting and foraging, and cavity nesting). A review of the literature indicates foraging areas typically have low-medium stem densities, are multi-storied and are most often associated with mature ponderosa pine mixed with Douglas-fir on mid slopes and ridgetops (Reynolds and Linkhart 1992). Dense younger conifer, aspen, and grasslands are avoided for foraging but forest/grassland edge at interior openings appear to be most preferred (McCallum 1994). Additionally, open crowns within ponderosa pine and Douglas-fir may facilitate maneuvering while capturing prey.

The proposed action will affect foraging and roosting habitat for flammulated owls across approximately 43% of their available habitat. Thinning operations are primarily focused in the lower and mid canopies of ponderosa pine and warm-dry mixed conifer. Pre-settlement ponderosa pine and Douglas-fir trees will not be affected by prescribed fire or mechanical treatments. No snags will be removed except for OSHA safety reasons. Snags and large ponderosa pine trees will continue providing cavity nesting habitat.

Treated stands will generally appear more open and park-like having an understory of grasses and herbaceous vegetation. Interspersed amongst these open stands will be existing clumps of denser ponderosa pine having a range of size and age classes. These ponderosa pine clumps will generally range in size from 1/20 to 3/4 acre having 2 to 40 trees. The spatial arrangement and amount of area in clumps will be variable and dependent on the existing clumpiness of individual stands. Post-treatment stand structure is expected to improve foraging habitat by increasing the amount of interior edge, thereby improving maneuverability for capturing insect prey (moths).

The removal of trees in the lower and mid canopy will allow trees in the mid and upper canopies to increase in size by reducing competition for nutrients (sunlight and water). As tree growth increases, there will be more large trees available to provide snags and replacement trees for cavity nesting. Additionally, trees in the mid and upper canopies are expected to display

increased sprawling form from horizontal branch growth, and provide improved roosting and foraging habitat for flammulated owls. A review of the literature from owl studies in Colorado show that flammulated owls do not preferentially roost in ponderosa pine but more often choose Douglas-fir if available or ponderosa pine with sprawling growth form (McCallum 1994). Although thinning trees from the mid canopy has potential to affect owls that might use these areas for roosting, available literature indicates owls are more likely to choose Douglas-fir present in mixed conifer forests for roosting, or trees with sprawling horizontal branch growth, a characteristic of large trees present in the overstory rather than smaller trees in the lower and mid canopies. Based on this information, the removal of trees in the mid canopy and possibly some from the upper canopy, from thinning and prescribed burning is likely to negligibly affect potential areas for roosting.

Machinery and human presence in the area may temporarily displace individuals during the nesting season. Habitat for flammulated owls is available across the remaining 57% of the habitat not being treated for disturbed individuals to relocate temporarily if disturbances exceed their tolerance. Prescribed burning generally occurs during the months of April through mid May, and in the fall during the months of October and November. Most flammulated owls are generally thought to begin nesting in May and early June (Reynolds and Linkart 1987, McCallum 1994). Consequently, most burning is likely to take place outside key nesting and post fledging periods.

Lewis' woodpecker

Direct and indirect effects

Under no action, vegetation within the analysis area will continue along its current successional pathway (see flammulated owl discussion). Barring any natural or human induced disturbances in the area, habitat for Lewis' woodpecker will decline as foraging habitat continues to decrease due to the dense nature of the forested stands. These stands will become more vulnerable to stand replacement fire, insect infestation, and/or disease.

Direct and indirect effects to Lewis' woodpecker from the proposed action are similar to those described for flammulated owl. The proposed action will create small openings in ponderosa pine stands, interspersed with large diameter Gambel oak and ponderosa pine clumps within groups across approximately 270 acres (7% of the area). Additionally, restoration treatments will create more open and park-like conditions across 32% of the available habitat. The combination of creating small openings and treatment across 32% of the habitat will enhance foraging habitat. Pre-settlement ponderosa pine and large diameter Gambel oak will be retained. Snags will not be affected with exception of removing trees for safety reasons, therefore cavity nesting habitat is not expected to be appreciably impacted. Machinery and human presence in the area may temporarily displace individuals during the nesting season for short period. Habitat for Lewis' woodpeckers is available across 68% of the remaining habitat not treated for disturbed individuals to relocate temporarily if disturbance exceed their tolerances.

Northern goshawk

Direct and indirect effects

Under no action, vegetation within the analysis area will continue along its current successional pathway (see flammulated owl discussion). Barring any natural or human induced disturbances to the area, habitat for northern goshawk will likely decrease in the future as stand densities

continue to increase making them more vulnerable to stand replacement fire, insect infestation, and/or disease.

Treatment of approximately 56% of the available goshawk habitat is designed to create small forest openings in mature ponderosa pine and warm-dry mixed conifer stands, and enhance existing mature and pre-settlement ponderosa pine within groups of trees encompassing several clumps.

The proposed action is expected to have beneficial effects to goshawk foraging and nesting habitat. Foraging habitat will be enhanced by prescribed burning and thinning ponderosa pine in the lower and mid canopies, enhancing goshawk maneuverability within the stand while pursuing prey. There may be some minor effects to existing foraging habitat by the removal of trees in the mid canopy and some in the upper canopy currently used by prey species such as Abert's squirrel, and avian species. Impacts to existing foraging habitat are expected to be minor as trees of all age classes will occur within the groups, providing habitat for prey species. In the long-term we expect to see larger trees and more uneven aged stand structures thereby enhancing both foraging and nesting habitat for goshawks.

Forest Plan direction includes the protection of all raptor nests identified in project areas, and implementation of measures to minimize disturbance to active nests during the breeding season. Five suitable goshawk nests are present within a known goshawk territory in the analysis area. Nest trees will be protected from project activities, seasonal restrictions will be applied for active nests, and proposed treatments within nest sites will occur as mentioned in the mitigation section. Any newly discovered nests will be reported to the wildlife biologist who will coordinate with the project leader to minimize impacts to the species.

Restoration treatments are designed to promote a more open and park-like forest condition across the landscape with understories of grasses and herbaceous vegetation. Interspersed amongst these open stands will be existing clumps of denser ponderosa pine ranging in size from 1/20 to 3/4 of an acre. These clumps will form groups of trees ranging in size from 1/4 to 2 acres. The spatial arrangement and amount of area in clumps will be variable and dependent on the existing clumpiness of individual stands. This forest condition will exist surrounding the known nesting area and beyond in which fledged goshawks utilize for developing hunting skills. In the short-term, treated areas will begin resembling forest conditions described by Reynolds et al (1992) with stand characteristics continually improving. In the long-term, post-fledging habitat is expected to continue improving and reach many of the desired characteristics and forest conditions described by Reynolds et al (1992). These forest conditions include openings, young forests, mid-aged forests, mature and older forests, canopy closures generally greater than 50%, snags, and woody debris.

Olive-sided flycatcher

Direct and indirect effects

Under no action, vegetation within the analysis area will continue along its current successional pathway (see flammulated owl discussion). In the short-term, barring any natural or human induced disturbances to the area, habitat for olive-sided flycatchers is expected to remain similar to current conditions. In the long-term, it is likely insect activity and wildfire occurrences will occur, affecting individual or groups of trees eventually leading to mortality and increased openings in the forest canopy. These openings in the forest canopy will create perching and foraging habitat for the species. Additionally a stand replacement wildfire event may further

enhance habitat for the species as the species is considered a post-fire specialists as it “sally’s and hawks” for flying insects while perched at the top of trees, generally in the overstory.

The proposed action will increase the amount of interior edge within the stands providing improved foraging habitat for the species (see discussion for flammulated owl and northern goshawk) discussion. Foraging behavior should not be affected since thinning will primarily target trees in the lower and mid canopies.

Spotted bat and Townsend’s big-eared bat

Direct and indirect effects

As mentioned previously, the analysis area is likely to be used as foraging habitat for spotted bats and Townsend’s big-eared bats given the presence of potential roosting habitat (cliffs, outcrops, crevices, and buildings) near the area. Because prescribed burning and mechanical treatments are designed to restore the health of ponderosa pine stands and promote resilience to natural disturbances such as wildfire, there should be benefits to the species. The treated area will become more open and park-like, potentially enhancing foraging habitat for both species across 37% of the available foraging habitat. Prescribed burning and mechanical treatments of shrub/Gambel oak are not expected to appreciably impact habitat for potential insect prey. Treatment will maintain a diversity of age classes within the shrub community. Clumps of larger/older oak will be maintained and distributed across treatment areas. Key foraging habitat such as riparian areas and 98% of the grass-forb parks/openings will not be impacted. Prescribed burning will occur on 2% of the grass-forb parks/openings which will likely enhance habitat for insect prey. Project activities will occur during the day when the species is less likely to use the area, thereby reducing potential disturbance.

Cumulative effects for sensitive species

Cumulative effects, as defined by NEPA, include the incremental effects of past, present, and reasonably foreseeable related future actions without regard to land ownership boundaries.

Human disturbances and manipulation of habitat for sensitive wildlife species has occurred in the past through such occurrences as timber harvest (and associated road building), livestock grazing, fire suppression, recreation, and urban development. Current and foreseeable activities include fuels treatments, livestock grazing, recreational use, and urban development on private land. These disturbances have and will continue to affect sensitive species and habitats by changing stand structures and compositions affecting habitat suitability for sensitive species, and through increased human presence in the area.

In general, historic timber harvests (early 1900’s) in accessible ponderosa pine stands in the analysis area removed most of the large, pre-settlement ponderosa pine trees and snags. Some reports indicate that 60-75% of the original volume was removed. After timber harvest, Gambel oak began to dominate the understory of many pine stands in the analysis area. During this same period, livestock grazing and fire suppression significantly reduced the recurrence of the frequent, low intensity fires historically known to have burned in the area. As a consequence, Gambel oak continued to dominate. Presently, there are no timber sale operations in the area.

The analysis area has been grazed since the early 1900s. Portions of 3 range allotments occupy the majority of the analysis area, including Park/Valle Seco (11,253 total, 8,967 acres within the analysis area), Coyote Creek (6,071 acres total, 4,290 acres within the analysis area),

and Klutter (3,423 total, 2,040 acres within the analysis area). Consistent with grazing impacts elsewhere on the Pagosa Ranger District, grazing was likely heavy in the scattered meadows and along stream courses in the analysis area. Before the 1970s, higher numbers were run on all three allotments than are run currently. Historic grazing practices may have led to the reduction of fine fuels (in this case, grasses) that reduced the spread of fires, especially on lower-elevation sites in the analysis area. More recently, with the advent of fire suppression, cattle grazing has had a lesser effect on forest structure within the analysis area, since stocking rates are relatively low and areas are frequently rested or deferred. About 1,461 acres of open meadows in the three allotments are considered primary range. Areas around stock ponds in the analysis area tend to display overall utilization of greater than 50%, however the majority of the primary range meets the Standards and Guidelines of the Forest Plan. Grazing will continue in the foreseeable future.

Fire suppression has helped perpetuate homogenous forest conditions that lack the structural variety beneficial to sensitive species. Furthermore, fire suppression has placed much habitat for sensitive species at risk of stand replacing fires with the potential to adversely impact habitat that is crucial for their survival. The proposed ponderosa pine restoration treatments will help reduce the adverse affects of continued fire suppression by improving stand structures and composition, and further increase the stands resilience to unnaturally intense disturbances such stand replacement wildfire events, insect infestations, and/or disease.

Past and present recreational use of the analysis area includes fuelwood gathering, small and big game hunting, turkey hunting, camping, hiking, mountain biking, and horseback riding. Fuelwood gathering in some locations has reduced the availability of snags for cavity nesting species. Within the last year, the District has established a snag cutting policy that combined with current drought and insect activity, should increase snag densities in the foreseeable future. Other recreational uses that occur in the analysis area likely result in disturbance to species especially during fall big game hunting seasons. Disturbance related impacts are lessened during other seasons given the low to moderate use that occurs in the area. During the summer, most visitors are attracted to higher elevations across the District, including wilderness areas where temperatures are generally cooler than those at lower elevations. Most forest visitors are attracted to areas such as streams, rivers, lakes and reservoirs, features that are absent from the analysis area.

Finally, residential development associated with the Alpine Lakes Subdivision has occurred within the past 5 years, and will continue to occur in the foreseeable future. This development consists of 212 lots ranging in size from 35 acres to 105 acres. As of May 2002, there were 32 residences built in the subdivision, with 6 more under construction. Several miles of new roads have been planned or developed. This development, which is occurring in open parks shrub/Gambel oak, and ponderosa pine cover types, adds to the fragmentation of naturally fragmented habitats found within the area. Although development does not occur on the SJNF, activities that occur on private lands can add cumulative effects to management actions planned on the Forest.

Activities associated with this project, and implementation of mitigation measures should result in short and long-term beneficial effects to most sensitive species, and slightly impacting others (three-toed woodpecker). Based on past, present, and reasonably foreseeable future activities, and application of the mitigation listed below, short and long-term cumulative impacts are expected to be beneficial for American peregrine falcon, flammulated owl, Lewis' woodpecker, northern goshawk, olive-sided flycatcher, spotted bat, and Townsend's big-eared bat. Proposed restoration treatment will help reverse habitat related impacts to these species from past

activities in the area, providing habitat that will sustain populations in the future. There are no cumulative effects expected for the northern leopard frog or American three-toed woodpecker.

MITIGATION MEASURES

All sensitive species

Mitigation for riparian areas identified in the EA will minimize adverse impacts to northern leopard frogs, and other sensitive species and their prey.

American three-toed woodpecker, flammulated owl, Lewis' woodpecker, northern goshawk, and olive-sided flycatcher

Snags and replacements: Forest Plan standards and guidelines require the protection and/or provision of 20 snags per 10 acres in all forested types in management areas 6B and 7E. Management areas 4B and 5B have the same snag protection/provision requirement, but call for 25 to 30 snags per 10 acres in all forest types.

No snags will be cut irregardless of size except for meeting OSHA safety reasons. Snags will be protected to the extent possible during mechanical and prescribed burning treatments. The contractor will be required to pull slash away from snags to help protect them from prescribed burns. Where burning will occur, snags will be protected by Forest Service personnel before burning where feasible. Protection may involve one or a combination of the following: scraping hand line around the snag and/or spraying them with water.

Replacement trees will be provided by retaining all pre-settlement trees, and mature sized trees that are not harvested. In addition, green trees containing cavities, spiked tops, broken tops, lightning scars or "wolfy" trees will be maintained as snag replacements.

Northern goshawk

Personnel involved in project preparation, layout, and administration will be trained in goshawk species and nest identification. There is a known goshawk territory containing five nests that are adjacent to a Forest Developed Road in the analysis area. All nests are located within 400 feet of the road. A ¼ mile minimal disturbance activity zone will be established around active goshawk nests from March 1 to August 15 to protect nesting birds. A wildlife biologist will confirm whether the nesting area is being actively used. Given that nest locations are adjacent to an existing open road, goshawks have likely become habituated to vehicular activity. Vehicular activity associated with project activities will be monitored to determine any need for restrictions.

As recommended by Reynolds et al. (1992) nest areas may be treated via thinning unwanted understory trees or shrubs with non-uniform spacing using prescribed fire or hand tools. These activities should be applied outside the March 1 to August 15 seasonal restriction. Treatment should be applied in a manner that does not reduce basal areas below 110 square feet, or reduce canopy closure less than 50%. High canopy closures (50-70% +), large overstories, basal area between 90-110, and open understories are desired structural attributes for nest areas (Shuster 1994).

Place landings and skid-trails outside the nest area as far away as possible, to prevent creating large openings near the nest stand and potential access points for human disturbances.

Spotted bat and Townsend's big-eared bat

Mitigation for riparian areas identified in the EA will minimize adverse impacts to potential riparian foraging habitat for spotted bats and Townsend's big-eared bats.

EFFECTS DETERMINATION

The proposed action will have **no impact** on the following Forest Service Region 2 sensitive species known to occur, suspected to occur, or with habitat present on the SJNF: boreal toad, American bittern, black swift, boreal owl, burrowing owl, Columbian sharp-tailed grouse, northern harrier, short-eared owl, white-tailed ptarmigan, bluehead sucker, Colorado River cutthroat trout, flannelmouth sucker, roundtail chub, Great Basin silverspot, Gunnison's prairie dog, river otter, and wolverine. These species utilize habitats that are not present, or no known populations exist in the analysis area.

Activities associated with the proposed action will avoid the limited amount of habitat present in the analysis area (no treatment proposed in habitat, or areas will be avoided through project design criteria, or implementation of Forest Plan Standards and Guidelines) for the Brewer's sparrow, ferruginous hawk, loggerhead shrike, purple martin, and American marten. Consequently, the proposed action will have **no impact** on these species.

Northern leopard frog

In view of the projects direct, indirect, and cumulative effects, and implementation of riparian mitigation measures, the proposed action **may adversely impact individual northern leopard frogs but is not likely to result in a loss of viability in the planning area nor cause a trend toward federal listing or loss of species viability rangewide**. The proposed action will not impact riparian areas or developed stock ponds that provide habitat for northern leopard frogs. Northern leopard frogs may disperse from water sources especially during rainy periods at which time they become more vulnerable to mortality from vehicles and other machinery operating in the area.

American three-toed woodpecker

In view of the projects direct, indirect and cumulative effects, and implementation of snag mitigation, the proposed action **may adversely impact individual American three-toed woodpeckers but is not likely to result in a loss of viability in the planning area nor cause a trend toward federal listing or loss of species viability rangewide**. Prescribed burning and mechanical treatments are designed to help restore stand structure and composition of ponderosa pine and warm-dry mixed conifer, thereby reducing the risk of a stand replacement wildfire, insect infestation, and/or disease. Three-toed woodpeckers are common during post stand replacement wildfire event when bark beetles enter the area. Treatment will reduce the risk of a stand replacement wildfire and corresponding bark beetle activity, thereby reducing three-toed woodpecker habitat in the future.

American peregrine falcon

In view of the projects direct, indirect, and cumulative effects, the proposed action will have **no impact** on the American peregrine falcon. There are no peregrine falcon eyries, nor is there suitable habitat for nesting within the analysis area. Although the project will take place in foraging habitat for this species, there will be no reduction in suitable foraging habitat, and no impact to key foraging areas such as parks and other openings, or riparian areas. Treatment will enhance habitat for potential ponderosa pine avian prey.

Flammulated owl

In view of the projects direct, indirect, and cumulative effects, and implementation of snag mitigation, the proposed action **may adversely impact individual flammulated owls, but is not likely to result in a loss of viability in the planning area nor cause a trend toward federal listing or loss of species viability rangewide**. This determination is based on the likely insignificant effects from potential disturbance to the species during the nesting season, and minimal effects to current ponderosa pine stand structure potentially used for roosting. The objectives and goals for restoration of ponderosa pine and warm-dry mixed conifer forests will result in short and long-term beneficial impacts to the flammulated owl by improving foraging, roosting, and nesting habitat.

Lewis' woodpecker

In view of the projects direct, indirect, and cumulative effects, and implementation of snag mitigation, the proposed action **may adversely impact individual Lewis' woodpeckers but is not likely to result in a loss of viability in the planning area nor cause a trend toward federal listing, or loss of species viability rangewide**. This determination is based on the likely insignificant effects that may result from disturbance to the species during the nesting season. The objectives and goals for restoring ponderosa pine and warm-dry mixed conifer forests will result in short and long-term beneficial impacts to the Lewis' woodpecker by improving foraging and nesting habitat.

Northern goshawk

In view of the projects direct, indirect, and cumulative effects, and implementation of snag and goshawk mitigation, the proposed action **may adversely impact individual northern goshawks but is not likely to result in a loss of viability in the planning area nor cause a trend toward federal listing or loss of species viability rangewide**. This determination is based on the likely insignificant effects that may result from disturbance to the species while foraging and nesting in the area, and limited impacts to vegetation and stand structure currently used for foraging. Nesting habitat will be maintained and enhanced through the application of goshawk mitigation. The objectives and goals for restoring ponderosa pine and warm-dry mixed conifer forests will result in short and long-term beneficial impacts to the northern goshawk by improving foraging and nesting habitat.

Olive-sided flycatcher

In view of the projects direct, indirect, and cumulative effects, and implementation of snag mitigation, the proposed action **may adversely impact individual olive-sided flycatchers but is not likely to result in a loss of viability in the planning area nor cause a trend toward**

federal listing or loss of species viability rangewide. This determination is based on the likely insignificant effects that may result from disturbance to the species while foraging in the area. The objectives and goals for restoring ponderosa pine and warm-dry mixed conifer forests will result in short and long-term beneficial impacts to the olive-sided flycatcher by improving foraging habitat.

Spotted bat and Townsend's big-eared bat

In view of the projects direct, indirect, and cumulative effects, and implementation of riparian mitigation, the proposed action **may adversely impact individual spotted and Townsend's big-eared bats but is not likely to result in a loss of viability in the planning area nor cause a trend toward federal listing or loss of species viability rangewide.** This determination is based on the likely insignificant effects that may result from prescribed burning and mechanically treating shrub-Gambel oak vegetation that provides habitat for insect prey. The objectives and goals for restoring ponderosa pine and warm-dry mixed conifer forests will result in short and long-term beneficial impacts to both species by improving foraging habitat via creating more open park-like areas.

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